

Applic. No. 10/705,516

Amdt. dated August 17, 2005

Reply to Office action of May 17, 2005

Remarks/Arguments:

Reconsideration of the application is requested.

Claims 1-14 remain in the application. Claims 1-6, 8, and 13 have been withdrawn from consideration.

In the third paragraph on page 2 of the above-identified Office action, the Examiner stated that claim 12 does not belong to the elected embodiment. Applicants respectfully disagree with the Examiner. Claim 12 does read on the elected species of Figs. 1-4, as correctly stated in the response dated February 17, 2005. Therefore, it is requested that the Examiner consider claim 12 in any further Office actions.

In item 2 on page 2 of the Office action, the Examiner stated that the title of the invention is not descriptive. Applicants disagree with the Examiner. The title is fully descriptive and indicative of the invention to which the claims are directed. Therefore, the title has not been amended as requested by the Examiner. It is noted that the method claims may be rejoined.

In the first full paragraph on page 3 of the Office action, claims 7, 9, and 10 have been rejected as being fully

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anticipated by Carichner (U.S. Patent No. 5,550,403) under 35
U.S.C. § 102.

As will be explained below, it is believed that the claims
were patentable over the cited art in their original form and
the claims have, therefore, not been amended to overcome the
references.

Before discussing the prior art in detail, it is believed that
a brief review of the invention as claimed, would be helpful.

Claim 7 calls for, *inter alia*:

each of the external contact elements having an internal
section with an internal core and an internal coating, the
internal section being disposed in the plastic housing, each
of the external contact elements having an external section
with an external core and an external coating.

The Carichner reference discloses using connector pins (24) or
solder balls (54) as contacts. There is no disclosure in
Carichner that the connector pins (24) have a coating.

Applicants respectfully disagree with the Examiner's position
on page 3 of the Office action that the Carichner reference

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discloses each of the external contact elements having an external section with an external core and an external coating (outer portion of 24). It is applicants position that the term coating requires that the coating has a thickness and that there is an interface between the core and the coating. Accordingly, it is respectfully believed that the Examiner's position that the Carichner reference discloses an external coating is not correct.

As can be seen from the above-given comments, the reference does not show each of the external contact elements having an internal section with an internal core and an internal coating, the internal section being disposed in the plastic housing, each of the external contact elements having an external section with an external core and an external coating, as recited in claim 7 of the instant application. The Carichner reference discloses connector pins. Carichner does not disclose that the connector pins have an external coating. This is contrary to the invention of the instant application as claimed, in which each of the external contact elements has an internal section with an internal core and an internal coating, the internal section being disposed in the plastic housing, each of the external contact elements have an external section with an external core and an external coating.

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Since claim 7 is believed to be allowable over Carichner, dependent claims 9 and 10 are believed to be allowable over Carichner as well.

Even though claim 7 is believed to be allowable, the following remarks pertain to the non-obviousness of claim 7.

The present invention pertains to improving the connection between an electronic component and a higher-level substrate (i.e. printed circuit board) when the joint is subjected to high thermo-mechanical loads.

The present invention discloses providing external contact elements having a core and a coating. Additionally, the internal section of the contact includes an anchoring region for improving the mechanical interlocking between the external contact and the plastic housing of the electronic device. The external section of the external contact element has a region which tapers away from the external contact side of the electronic device.

This configuration results in an improved ability of the electronic component to withstand the shear forces that occur under thermo-mechanical loading. Furthermore, the stress

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occurring at the boundary between the soldering connection and the external section of the external contact can be distributed over a larger area.

Carichner discloses an alternative solution to the problem of thermal cycling and discloses a package with a substrate which encloses the semiconductor chip. The stresses of thermal cycling are reduced because the base and the cover portions have similar coefficients of thermal expansion.

Carichner discloses that the problems caused by thermal cycling can be solved by the use of the base and cover portions of a composite material. Therefore, Carichner does not suggest providing an external contact element having a core and a coating to reduce the problems associated with thermal cycling.

Accordingly, Carichner does provide any motivation to a person of ordinary skill in the art to use a plastic housing and external contact elements having a core and a coating.

In the second paragraph on page 4 of the Office action, claim 11 has been rejected as being obvious over Carichner (U.S. Patent No. 5,550,403) under 35 U.S.C. § 103. Since claim 7 is

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believed to be allowable, dependent claim 7 is believed to be allowable as well.

In item 5 on page 4 of the Office action, claim 14 has been rejected as being obvious over Carichner (U.S. Patent No. 5,550,403) in view of Fujita et al. (U.S. Patent No. 5,485,039) (hereinafter "Fujita") under 35 U.S.C. § 103. Fujita does not make up for the deficiencies of Carichner. Since claim 7 is believed to be allowable, dependent claim 14 is believed to be allowable as well.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 7. Claim 7 is, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claim 7, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 7-14 are solicited. Since the method claims include all of the limitations of the product claims it is requested that the method claims be rejoined.

In the event the Examiner should still find any of the claims to be unpatentable, counsel respectfully requests a telephone

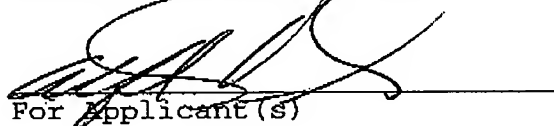
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call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made:

Please charge any other fees which might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner & Greenberg P.A., No. 12-1099.

Respectfully submitted,



For Applicant(s)

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